



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

JAMES B. HUNT JR.  
GOVERNOR

R. Thomas  
FYI,  
✓ Brian  
✓ Sterling  
✓ Murphy  
DAVID MCCOY  
SECRETARY  
✓ Ben

MEMORANDUM TO: Project Engineers  
Project Design Engineers

FROM: John Alford, PE *John Alford*  
Assistant State Roadway Design Engineer

DATE: July 14, 1999

SUBJECT: CADD Concerns

Attached is a copy of a letter from Location & Surveys stating some problems they have encountered with plans, both in-house and PEF projects. I will discuss these below according to the numbering system used in Locations and Surveys' letter.

Item 1) Right of way markers should always be placed by plus and distance so the coordinates and stations are mathematically correct.

Item 2) Distances should be labeled to 3 decimal places in Metric units and 2 decimal places in English units. I assume that for the example given, the decimal default value was inadvertently set to 1 place.

Item 3) Edit your .gpk files for unnecessary chains. Also, you should use standard naming conventions so others will know the alignments, etc. the file contains. A more specific proposal for the numbering system to use within these files is in the works and this information will be forwarded when finalized. These files should be provided to Construction, as requested.

Item 4) Check the working units and global origin if you are responsible for reviewing a consultant project. The process of setting global origins will change later this fall. This change

Roadway Project Engineers  
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is necessary to obtain the CADD accuracy needed when using English units.

Item 5) Do not place monuments on property lines unless it is at the beginning or end of a project or there are special circumstances that dictate otherwise. This has been the policy for several years now. Placing monuments on property lines creates additional work for Location and possibly controversy between adjacent property owners.

Last Item (unnumbered) Always begin your alignments with a station greater than 0+00.

I have asked Location & Surveys, Photogrammetry, Right of Way, Hydraulics, and other units to return any of Roadway's files which do not meet these and other established guidelines. Following the guidelines is even more critical now that our files are being used by other units to draft property deed descriptions, generate condemnation plots, prepare as built plans, and in the near future, for automated quantities.

Please stress the importance of abiding by established guidelines to your employees. Do not hesitate to contact me if you have any questions or suggestions.

JEA

Attachment:

cc: Debbie Barbour, PE  
Bob Brown, PE  
Charlie Brown, PE, PLS  
Cecil Hinnant  
John Williamson  
Archie Hankins, PE



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P.O. BOX 25201, RALEIGH, N.C. 27611-5201

E. NORRIS TOLSON  
ROADWAY DESIGN UNIT  
RECEIVED SECRETARY FILE

MAY 05 1999

May 3, 1999

TO: W. R. Brown, PE  
State Design Services Engineer

G. T. Shearin, PE  
State Roadway Design Engineer

FROM: C. W. Brown, PE, PLS *On*  
State Location & Surveys Engineer

BARBOUR	ALFORD
BREW	ALLEN
GOODNIGHT	BENNETT
LASSITER	FLOWERS
MCMILLAN	NORRIS
SPER	SYKES
DURHAM	PURYEAR
INTERVIEW	
PREPARE REPLY FOR	COMMITTEE
✓ <i>TS</i> / <i>LN</i>	

SUBJECT: CADD Concerns

During the meeting of our Location & Surveys Technical Users Group in March, several issues were discussed concerning CADD design files and plan sheets. Our concerns are as follows:

*John:*  
*I GAVE*  
*LN A*  
*COPY*

- 1) When using Coordinate Geometry to check some coordinates on monuments placed in a design file graphically, we have found that some have been off as much as two or three feet from computed coordinate. Do we (NCDOT) have any policy regarding graphic design and object placement? With the present concerns about working units, do we need to establish any procedures to ensure satisfactory accuracy is obtained?
- 2) We have seen numerous examples of the rounding off of R/W monuments that occur at PC's, PT's, etc., on plansheets, i.e., plansheets show 25+62.249 rounded to 25+62.2.
- 3) As we further develop our CADD use, we are finding more opportunities and need for shared GPK files. Often these GPK files have not been edited of unnecessary chains, and it can be a time consuming process to have to test each chain. Also, we have often run into chains bearing personal names rather than alignment names. Mr. James Norris and I have discussed the use of GPK files with GEOPAK. Are we (NCDOT) ready to establish common procedures and naming conventions for what goes into a GPK file?
- 4) The working units and global origin have been altered in some design files that we have received back from consultants.
- 5) There continues to be R/W monuments placed on property lines. The placement of R/W monuments on private property lines requires substantial additional work in verification. Consideration should be given to the placement of R/W

monuments on property lines at the request of the R/W Agent, in response to the particular needs of a project or property owner.

Along with these concerns, we would like to submit one request. The common data collection/stakeout software for Location & Surveys and Construction, TDS, requires any alignment to begin with a tangent section. This can be as small as 0.001'. If an alignment begins with station 0+00, we have no room for editing and the addition of this tangent section. Starting alignments at some value greater than 0+00 will enable the down-loading of alignments into our data collection software, which would greatly enhance both our own and Construction's electronic capabilities.

With your consensus, I would like to recommend that the CADD Uniformity Task Force address items 1-4 and our request on alignment stationing. Please address item 5 with your staff. Thank you for your consideration and assistance in this matter. If you have comments or are in need of further information, please do not hesitate to contact me.

CWB: tsg

Cc: Mr. R. L. Hill, PE